CLAIMS

1. An apparatus for generating corona discharges, comprising

a corona discharge space;

a discharge electrode disposed in the corona discharge space; as well as

a high voltage source, an output of which is connected to the discharge electrode, **characterized in that** at least one element having diode functionality is connected between the high voltage source and the discharge electrode, which element delivers a DC high voltage component comprising a superposed AC high voltage component on the discharge electrode.

2. An apparatus according to claim 1, **characterized in that** the element having diode functionality is a semiconductor, which is configured as a rectifier, a transistor, a diode or a thyristor, for example.

3. An apparatus according to claim 1 or 2, **characterized in that** the element having diode functionality is configured as a single-phase rectifier.

4. An apparatus according to claim 1 or 2, **characterized in that** the element having diode functionality is configured as a bridge rectifier.

5. An apparatus according to any one or more of the preceding claims, **characterized in that** the DC high voltage is 10-60 kV, more in particular 5-35 kV.

6. An apparatus according to any one or more of the preceding claims, **characterized in that** the frequency of the AC high voltage is 0.1-100 kHz, more in particular 5-30 kHz.

7. An apparatus according to any one or more of the preceding claims, **characterized in that** the discharge electrode is an elongated body having several projecting edges or cams.

8. An apparatus according to claim 7, characterized in that said projecting edges extend on either side of said body.

9. An apparatus according to any one or more of the preceding claims, characterized in that the corona discharge space is built up of at least two parallel, electrically earthed plates, between which plates the discharge electrode extends in parallel relationship therewith.

10. An apparatus according to any one or more of the preceding claims, characterized in that the element having diode functionality is connected in series with an LR-circuit, which LR-circuit is connected to the discharge electrode.

11. An apparatus according to claim 10, characterized in that the induction value L of the LR-circuit is adjustable.

12. An apparatus according to claim 10 or 11, characterized in that said inductance value ranges between 1 nH and 1000 mH.

13. An apparatus according to any one or more of the preceding claims, characterized in that the high voltage source is an AC/DC pulse converter.

14. An apparatus according to any one or more of the preceding claims, characterized in that the high voltage source is an AC/DC/AC converter.

15. A discharge electrode for use in an apparatus according to any one or more of the preceding claims and as defined in claim 7 or 8.